

IntegratedCare4People

Creating a Sustainable Model of Spine Care
in Underserved Communities in Botswana

PROMISING PRACTICE

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A. ABSTRACT

The world lacks sustainable models of care to manage spinal disorders in poor and underserved communities. Given that burden of disease studies rank spinal disorders among the leading causes of disability in developing countries and the fact that low-income countries have much need but few resources for delivering adequate care, World Spine Care (WSC) was established with a mission “to improve lives in underserved communities through sustainable, integrated, evidence-based spinal care”. The vision of WSC is “A world in which everyone has access to the highest quality spine care possible.”

Initial objectives of WSC were the development of a pilot program in Botswana focusing on community and patient needs in the management of spine disorders, and to evaluate the feasibility of creating a sustainable program through an evidence-based, interprofessional care pathway, and to the outcomes of this pilot program (utilization, patient satisfaction, clinical outcomes, impact on local community burden of spine disorders, and cultural appropriateness).

WSC opened its first pilot program in Botswana in 2011 after individuals from WSC visiting the country and speaking to people there realized the critical impact that untreated spinal disorders were having on individuals, their families and their communities. Clinical services, community health programs, research projects and education-based capacity building initiatives have been adapted to and integrated within the communities of Shoshong and Mahalapye in collaboration with local decision makers, existing health care workers, traditional healers and the public.

Early in the development of the Botswana program, a number of principles were established to guide its formation. First, that any management approach must be people-centred, based on current evidence-based guidelines and incorporating an integrated and interprofessional approach where possible. Second, this management approach must have a community-based education component for first responder health care providers and the public at large. Third, any project must be a cooperative venture with local government, health agencies and community leaders, and fourth, that the program must be sustainable with eventual transfer to local care agencies.

Cornerstones of WSC’s emphasis on long-term sustainability in Botswana are:(1) education to support capacity building in community partners, governments and local health professionals; and (2) facilitation of opportunities for training graduate students in a variety of health-related fields.

This practice example shares the experience of WSC in implementing an evidence-based, patient-centred model of integrated care for the management of chronic musculoskeletal conditions in a

low income country. Facilitators and barriers to implementation as well as lessons learned are outlined.

B. DESCRIPTION OF THE PRACTICE

Context and problem description

The Global Burden of Disease Report 2010 identified low back pain as the leading cause of disability worldwide. Neck pain was ranked # 4 in terms of global disability [1]. Together the burden of neck and back pain are equivalent to a permanent recession in developing countries [2]. They create an enormous burden on people, their families, their communities and society, particularly in the developing world. [2]. The WHO has indicated that there is a critical lack of access to health care services in low income countries. People suffering from spine pain in these parts of the world essentially have little to non-existent access to spine care due to lack of prioritization of spine disorders and a severe shortage of trained health workers to deliver primary, secondary and tertiary spine care.

With the publication of the Bone and Joint Decade Task Force on Neck Pain and Its Associated Disorders and the increasing recognition of the burden of spine disability, initiatives to reduce disability have raised the profile of these disorders as an important global and community burden and have stressed that spine care has to be based on evidence. To date, however, there is no sustainable model of care for the management of spinal disorders that could be recommended or implemented in poor and underserved communities in the world. [3] At project initiation there were no conservative spine care clinical services available in the village of Shoshong, Botswana.

Literature searching revealed that there were a number of mission-type programs, that provided the opportunity for clinicians, including spine surgeons, physiotherapists and chiropractors, to spend a couple of weeks offering short-term care. However, research on the effectiveness of different treatment approaches on spine pain and its associated disability has repeatedly noted that spinal disorders and especially common back and neck pain tend to be chronic and/or recurrent in nature. Thus, short-term treatment of any kind without a focus on risk and prognostic factors is unlikely to have significant impact on the burden of these disorders for people living in these communities.

The World Spine Care (WSC) program was created to address the increasing burden of spinal disorders on people living in underserved regions of the world with the development of a collaborative, integrated and sustainable program. The present practice focuses on the first pilot project of WSC, realized in the Shoshong and Mahalapye districts in Botswana. In Botswana, the burden of low back pain alone was estimated to be the 5th leading cause of disability adjusted life years (DALYS) in 2013. Neck and back pain combined was ranked as the number one cause of

years lived with disability (YLDs), increasing from the third position in 1990 to the first position in 2013. [4] Botswana also suffered from the lack of available health workforce to manage spine disorders with no specialized spine surgeons and very few physiotherapists or chiropractors able to manage the primary care burden of these conditions. Additionally, lack of resources limited coordination of care and community engagement in health service delivery planning for spine pain.

Key milestones

Table 1. Milestones

2009	Creation of WSC (Registered as a Charitable Organization in 2009 in the USA and in Canada in 2012).
2010	Meeting with the Ministry of Health, Botswana to initiate discussions with national and local community members
2011	Memorandum of Understanding signed in Gabarone December – Opening of Mahalaphe District Hospital Clinic
2012	August – Scaling up to second Botswana site in Shoshong village clinic Start of Community outreach, education and health promotion activities
2013	Scoliosis public health screening program delivered Research projects underway in Botswana (several projects have been completed and/or underway) Educational rotation for post-graduate learners initiated in Botswana
2014	Implementation of community-based self-management programs
2015	Development and pilot testing of WSC clinical outcome measure in the Botswana clinics WSC related publications. Ongoing data collection and research Scaling up to program opening in Dominican Republic
2016	Renewal of MOU with Botswana Government Initiation of the Yoga Project (a train-the-trainer program) Scaling up to new program opening in Ghana and India

Health service delivery transformations

Selecting services

In all WSC clinics, the services are provided to both male and females of any age, who live in the local communities which the clinic serves. Services are provided free of charge to patients so that there are no economic barriers to accessing care.

In order to ensure sustainability it was determined that WSC clinics could only be established with the active support of the local government and health care facilities. In Botswana two local areas were identified for program implementation. This identification occurred in collaboration with the Ministry of Health in Botswana, the Mahalapye District Hospital, local health providers, community leaders and people living in the communities of Mahalapye and Shoshong. The integration of a WSC clinic within the Mahalapye hospital was facilitated by hospital leaders and supported through government funding. To that point in time, people attending the hospital emergency services with complaints of mechanical back or neck pain were primarily prescribed medication as no physical treatment was available. In Shoshong, the clinic is located within the community health centre compound adjacent to the other local health service providers (a primary care clinic, a maternity ward and an AIDS clinic) where close collaboration occurs.

WSC elected to establish clinics in areas where people were already attending for care of other ailments, and where WSC could capture, inform and become involved in these communities. Once a contact and a memorandum of understanding with the local government was established and approved, the clinical site planning commenced. The first steps were to develop administrative and bureaucratic protocols to facilitate the physical location of the clinics. In Shoshong, the government provided a modified container facility, transformed into clinical space. In Mahalapye, the clinic is located within the district hospital.

Services offered within the Botswana program are multipronged, targeted to address community-specific stakeholders in both Shoshong and Mahalapye. Clinical programs focus on care delivery (assessment, imaging and laboratory testing where needed, diagnosis, treatment), patient education and reassurance with self-management strategies, and community-based health education (prevention and health promotion).

Designing care

Prior to the initiation of service delivery, the WSC team visited with local community leaders and health providers to discuss the priorities of the community. Several ‘town hall’ meetings were held where the WSC team was able to meet with and learn about local patient, family and community needs with respect to spine pain. The WSC team, in collaboration with local providers and patients, created the clinical triage and treatment protocols, clinical documentation and data collection processes, secured the clinical and therapeutic equipment required to provide care from donors, and ‘advertised’ the program at local community and public meetings. The Botswana clinical and scientific teams utilized a methodical approach to the development of its spine care pathways.

WSC collaborated with local health providers, community members and the public through an iterative process to create the Botswana spine care pathway. A secondary benefit to this

collaboration has been the education of the community as well the capacity-building of local health providers who have received education to improve their understanding, awareness of and skill in identifying and managing spine disorders. The WSC model is also informed by the best-available evidence and clinical practice guidelines and has been standardized across clinics to ensure consistency and quality of care provision. Services are individualized, based on patient needs, as identified throughout the intake process where patients undergo a detailed historical interview (with interpreters as needed), identify their spine health priorities, complete the initial outcome measure (incorporating pain, area of complaint, ADL limitation, occupation-related disability and quality of life indicators), undergo a comprehensive physical examination (and diagnostic testing as required) and participate in treatment planning. Ongoing feedback from patients through interviews and a questionnaire (CFQ – Clinical Follow-up Questionnaire) specifically designed for the Botswana program is used to help in program improvement and evolution.

All primary spine care provided to patients is individualized, evidence-based and delivered within the community clinic. If specialty care or diagnostic tests are required referrals are made to a district hospital in Mahalapye or other specialty centre, where collaborative agreements have been established.

Care pathways and the delivery of care are under continuous review by the WSC clinical and research committees (which meet by teleconference on a monthly basis) and through WSC's ongoing feedback mechanisms from patients and local health providers to ensure that the program is addressing the needs of patients and communities and also providing robust data through which to evaluate its effectiveness and inform future program evolution.

Organizing providers

All stakeholders, including health professionals, policy makers, community leaders and government were provided with education regarding the epidemiology of spine disorders, evidence around treatment and management of these conditions, integrated health care concepts and how to implement these within their local context, and the principles underlying people-centred health care. The relationships between WSC and local providers are supported by regular meetings, education sessions, spine conferences as well as collaboration in the development of new projects and initiatives. An example of the latter is the scoliosis screening program where WSC team members initiated a school program for scoliosis screening which included the training of local school nurses in the screening protocols. This resulted in the integration of this screening process into the school health program and enabled future sustainability. Collaboration between the government, school boards, school administrators and nurses facilitated this program development and also helped to maintain and further strengthen these relationships.

World Spine Care is made up of volunteers from more than 15 countries around the world representing experts from surgery, physiotherapy, chiropractic, nursing, radiology, epidemiology, anthropology, psychology, clinical research, education, rehabilitation, yoga, and others. Clinical care is provided by volunteers who undergo specific WSC training to provide services in the clinic. The recruitment and appointment of health care providers at WSC is through a comprehensive, structured process. Credentialing and background checks are completed on all applicants. Individuals may apply to be a primary spine care clinician (one-year commitment of time, and must be a chiropractor or physiotherapist with advanced training) or a short-term volunteer clinician delivering care (3 months minimum). Other volunteers, such as nurses (who perform the scoliosis screening), and medical specialists (surgeons and rheumatologists for example) also apply through a similar process, overseen by the WSC volunteer program coordinator. All health care providers also receive general education about working in Africa; education specific to translating knowledge about the Botswana cultural expectations; and are trained to WSC specific clinical protocols. They also receive education about the administration of the clinical program including data collection process and quality assurance processes. All volunteers undergo an interview and complete required administrative procedures (immunization, visas, etc) and are approved by the government which provides living accommodations and vehicles for WSC volunteers. The primary spine care clinician is provided living expenses for the 1 to 2 year commitment of time when they are providing services at a WSC site.

Interdisciplinary care services are provided as much as possible (determined by availability) as the clinicians in the clinic may be chiropractors, physiotherapists and nurses. Additionally, close collaboration with the local district hospital has facilitated prompt access to diagnostic imaging and laboratory testing. The government has provided a building in the Shoshong community health centre where services are provided and has committed to providing transportation for Shoshong patients to and from the Mahalapye district hospital where the other clinical site is housed and where more advanced diagnostic testing is available.

WSC has already initiated the training of local health professionals to become WSC clinicians and assume responsibility for the clinics in the future. Currently two Botswana students are in their educational programs in Canada and the USA to become chiropractors and an orthopaedic surgeon from Gaborone has recently completed his Spine Surgical Fellowship training through WSC in Turkey. All have commitments to return to Botswana and practice in the WSC program once their programs are completed. This local host capacity building will support the sustainability of the WSC clinical programs over the long term.

Processes were developed to ensure appropriate training and skill sets for health providers to deliver care in Botswana. WSC clinicians, administrative staff and community volunteers

developed these processes with the help of patients and qualitative researchers working in the community.

Managing services

WSC clinical services are overseen by an interprofessional Clinical Team, with regular input from on-site clinicians, short and long term volunteers, staff, on-the-ground researchers and patients. The Clinical Team is advised by a Clinical and Scientific Advisory Board which help to inform the team regarding new evidence in the management of spine disorders. The WSC Research Team and members of the Clinical Team collaborate on the implementation of outcome measures and data collection to ensure that quality data is collected, but also that the process of collecting data does not overly burden patients or the clinicians providing care. This multimodal approach and continuous quality improvement helps to ensure that the program is closely overseen and that clinical services are delivered safely and appropriately, consistent with the WSC model of care. .

The Botswana clinics are supported by the Ministry of Health as well as collaborating organizations and institutions, and through donations and research grants. Program planning occurs at multiple levels with broad input from funders, stakeholders and participants (providers/patients/communities). Discussions occur with the government and local district health teams on a regular basis with formal meetings annually to report on program indicators and outcomes. Planning also occurs at the local community level with local health workers, community leaders and WSC volunteers and staff. Budgets are overseen by the WSC Executive Team who liaises with government, donors and granting agencies.

The great majority of materials and equipment required for the clinics comes from donations. Physical facilities and office furniture is provided by the Botswana Government. Human health resources come from the provision of administrative on-site clinical support through the government as well as through the WSC volunteer program.

Improving performance

Ongoing improvement is facilitated by the collection of clinic data (patient demographics, utilization, validated outcome measures) collected at standardized intervals which produces rich quantitative data. Patient feedback is also solicited at the time of treatment and discharge sessions. Qualitative research continues to be conducted with patients and local community members to enrich the data WSC collects in Botswana. The ongoing engagement of researchers assists in a better understanding of the unique cultural environments in which the clinics are housed as well as the impact of spine care provision in these communities. WSC is in the process of establishing a central database that will collect important, anonymized clinical information about the people it cares for and the nature of spine conditions.

Performance enhancement also occurs through the ongoing training and development of WSC volunteer clinical staff as well as local health workers. In 2016, WSC collaborated with the Botswana Ministry of Health on the delivery of its second International Spine Care Conference where over 120 health professionals attended, the great majority supported by the government of Botswana, to learn about advancements in the management of spine care, new models of care delivery and self-management strategies for prevention and health promotion.

There is a culture of continuous learning through all levels of WSC. A range of educational training occurs with professional development for clinicians and staff, as well as integration of students from different health professional training programs into the clinics. Additionally, the Botswana primary spine care clinicians may be clinical faculty of affiliated academic institutions.

Engaging and empowering people, families and communities

From the outset, the WSC program in Botswana prioritized the engagement of local people, their families and the community in program development. Input is sought from patients and communities on an ongoing basis through formal and informal interviewing and through collection of patient outcome measures. At the outset, there was broad dissemination about the Botswana clinics to local and district communities through a variety of approaches (presentations, community meetings, publications, electronic media messaging, public broadcasting including television and radio programs).

Active patient engagement occurs as standard operating procedure at the WSC clinics both with respect to their involvement in care decision-making and in providing input around service delivery and in helping to identify local community needs. All patients receive culturally appropriate education about their health condition as well as about health promotion and disease/injury prevention strategies.

Along with engagement of the community in clinical care delivery, several other initiatives have been undertaken to enhance community involvement. Community members work in the clinics as interpreters, administrators and help facilitate open communication mechanisms between patients, WSC and the community itself. In Botswana, a national scoliosis screening program was conducted in 2013 where school nurses were trained to conduct the screening assessment. More recently, the Botswana program developed a train-the-trainer yoga project to help support health promotion and injury prevention. Local community workers were trained to provide yoga instruction according to protocols developed with the Botswana WSC clinics.

Section four: Conditions enabling change

Information Systems and Knowledge Management

The Botswana program prioritized the collection of consistent patient information and data management in order to underpin the evaluation of the efficacy of the program. There has been considerable work on the development of clinical documentation (intake forms, assessment forms, outcome measures) that is culturally appropriate for patients attending for care. This has been very important to ensure the meaningfulness and quality of the data being collected. All WSC volunteers are trained in the clinical documentation and service protocols.

Initial intentions toward the development of an electronic health record have met with difficulty due to lack of consistently available electricity and internet access. In light of this, data is captured and entered manually into an electronic database within each clinic.

Quality Improvement and Safety

WSC's clinical and research teams oversee the organization's continuous quality improvement initiatives (CQI) with ongoing input from many other stakeholders to improve service delivery. For example, when the Botswana program was initially implemented, several outcome measures were embedded within the standardized approach to patient care. Feedback from patients, interpreters and administrative staff resulted in a unique WSC-specific, validated clinical outcome measure which can be used as a repeated measure for evaluating ongoing process. This measure also includes a section on treatment adverse events so that the program is collecting data regarding safety of treatment.

Workforce

The WSC program workforce is almost entirely composed of volunteers. Only the clinical program director, who is full time, receives funding and this is in the way of an annual stipend. This large volunteer base enables a relatively small budget. Organizationally, WSC has volunteers from diverse backgrounds at the leadership level and on the clinical and research teams..

At the clinical service level, clinicians are volunteers from health professional backgrounds of chiropractic, nursing and physiotherapy, as well as different medical specialties (orthopaedics, neurology, rheumatology and radiology). For example, a radiologist volunteers his time to remotely view advanced diagnostic imaging for complex cases in the clinic.

At the clinical level, community members provide interpretation services, administrative support, community education and outreach, help with our public health programs (Yoga project, Straighten Up and Move program, Scoliosis screening program), and help to screen patients (through a pre-determined triage process).

Funding and Payment Systems

At the current time, there are no formalized payment systems (public or private) that support WSC operations and activities in Botswana. Public funding for WSC comes through agreements (Memorandums of Understanding) with the Botswana government, the local community and WSC. As noted earlier in this practice profile, the majority of WSC funding (and in-kind services) comes from commitments from government, collaborating academic institutions, professional association donations, research and operating grants, philanthropic foundations and individual donations. Despite the collaborative funding sources, a significant amount of funds come from donations, which are often uncertain. In some jurisdictions, funding is more stabilized. For example, in a scaled-up program which recently opened in Ghana, the government has committed to funding the entirety of the Ghana WSC clinic through their national health system.

Section five: Barriers to change

In the Botswana context, we found no significant barriers to change with respect to the initial delivery of spine services as there were no pre-existing similar services offered in the local host communities. However, there were several challenges and lessons learned during the pilot project which are important for WSC in its future development and which may be helpful to share with other organizations attempting similar programs.

Partnerships with the local government and community were very positive throughout the duration of program development and implementation, however at times, there were significant time delays in meeting targets required to begin delivery of services.

Considerable cultural differences between health provider expectations (having been trained and practicing outside of Botswana) and patient/community expectations were initially challenging. The support of consultants operating in Botswana, the hiring of local community members to work in the clinic, as well as the integration of a qualitative researcher early on who worked closely with local people were facilitators to overcoming these barriers. This was mitigated to some extent when the primary spine care clinician and qualitative researcher gained some literacy in Setswana to more easily be able to communicate with local people.

The pilot project has resulted in excellent levels of collaboration and uptake from Botswana government, communities and patients. However, it is still undetermined as to whether the program is meeting its intended target of impacting the associated burden of disease for spine disorders. This will take much longer to fully evaluate than the predicted 5 years.

Information management has also presented its own challenges. Over the first 5 years of program development the clinical processes and protocols were established, including the clinical documentation required to support the expected aims and outcomes. Validation of a unique, WSC-

specific outcome measure integrating adverse events has been successful and has been integrated within each of the clinics. The ongoing challenge is the difficulty in developing an electronic health record for optimizing clinical care, coordination and communication, and an electronic central database to collectively share anonymized patient data. The limitations are due to lack of available technology in the host country (sustained access to the internet and consistent electricity) making it currently impossible to develop and utilize these IT processes.

An additional challenge in Botswana is to fully demonstrate that it is possible to create a sustainable spine care program independent of outside funding or expertise. While initial results to date have been positive, this still remains to be seen. This will require full cooperation of local health care authorities and government agencies in the country as well as the training of clinicians drawn from the local community who are willing and able to continue offering the evidence-based model of care over the long term. This is built into the memorandum of understanding (MOU) signed with the government of Botswana, but it remains to be seen whether the government has the capacity and resources to continue the programs once WSC stops actively supporting them with financial assistance and volunteers.

Section six: Outputs, outcomes and impact

Between 2012 to 2014 the Botswana program provided spine care services to over 1,000 patients, 90% of which were managed with conservative care. Approximately 10% required referral for more serious pathology. In the past year, WSC developed a new clinical outcome measure and tested this in the Botswana clinics in early 2016. During pilot testing, the Clinical Follow-Up Questionnaire (CFQ) was administered to 57 consecutive patients. The great majority presented (68.4%) with a primary complaint of low back pain with neck and upper back pain as the second most common area of complaint (17.5%). Initial data from the CFQ with respect to pain and disability indicated good improvement in both indices in the pilot study group (Figure 1 below). Further data analysis is currently in process regarding the validation of this novel clinical outcome measure and the outcomes of the treatment patients are receiving.

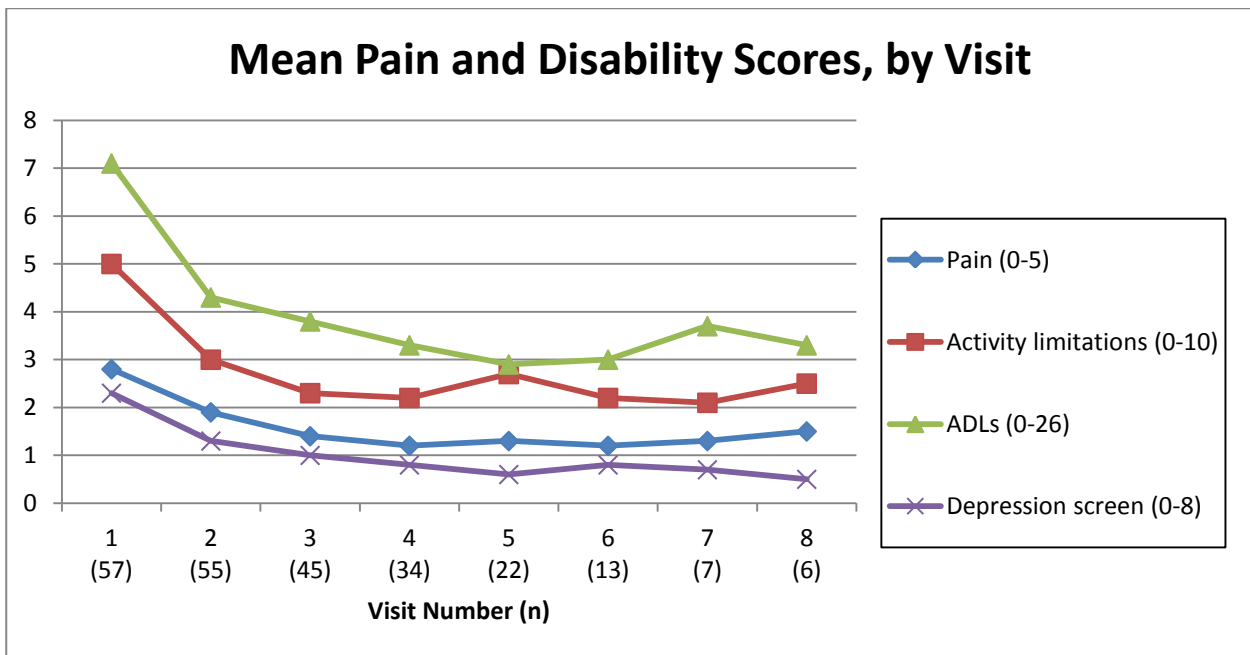


Figure 1. Pain and Disability Scores from the Botswana WSC program

The successful results achieved in Botswana to date have enabled the scaling up of this model of spine care to additional sites in Botswana as well as other sites in the Dominican Republic (2014) and Ghana (2016). These successes have helped to establish WSC as a recognized, international organization. New programs are being explored or are currently in development in other regions. It is hoped that these new models of care will help to transform the delivery of spine care services in other underserved regions of the world.

The initial pilot project in Botswana resulted in the establishment of two clinics, one in rural Shoshong village (2012) and one in the Mahalapye District Hospital (2011). At the current time, the government of Botswana has invited the development of a third clinic in the capital of Gaborone. To the end of December 2015 over 1300 patients had accessed care with over 10,000 patient treatments provided. The age range of people attending for care was 1 to 91 years, and approximately 75% were female. 40% had a primary complaint of low back pain, 80% of these were chronic (greater than 3 months duration) and over 90% indicated that their pain was interfering with their activities of normal living. The bottom line is that services have now been enabled for the past 3 years for people who previously had no access to conservative spine care.

Feedback from patients and local community members and health providers have indicated very high satisfaction and consistently high utilization of the services. The primary spine care clinicians and volunteers have been readily welcomed into the local community, context and culture.

The pilot project has supported the development of an evidence-based, inter-professional, sustainable model for primary care management of spinal disorders that is patient-centred. This has been described in the following publication: *Haldeman S. et al. Developing a sustainable*

model of spine care in underserved communities: the World Spine Care (WSC) Charity. The Spine Journal. 15 (2015):2302-2311. It has also resulted in the development of a novel clinical outcome measure relevant to the populations receiving care. Additionally, there has been the implementation of a scoliosis screening program that has screened over 900 primary school students in Botswana and has trained school nurses to conduct these assessments moving forward. The recent Yoga Project resulted in the training of several local community members who are now able to deliver an educational and fitness program focusing on health promotion and injury prevention.

Section seven: The process of leading and managing change

Key actors

Key actors engaged in the development of the Botswana program included WSC leadership, the Botswana Ministry of Health, Mahalapye District Hospital and local community leaders and health workers. Commitments from academic institutions and professional organizations enabled initial engagement of WSC organizers and volunteers through subsidized funding of faculty and organization representatives.

Political commitment was built based upon the recognition of the burden of spinal disorders in Botswana and the mutual identification of the urgent need to find a solution to this burden. Relationship building between WSC and the Botswana government was facilitated by the engagement of a local organization. (Premier Personnel, Botswana) with an excellent track record working with the government and a keen desire to provide support to this philanthropic initiative.

Volunteers, supported by their institutions or organizations, worked closely together, despite geographic and professional differences, to identify a model of care that could be implemented in Botswana and an evaluation process with which to determine program outcomes.

Initiating change

The work of the UN Bone and Joint Decade (BJD) on the burden of musculoskeletal conditions and the identification of spine pain as a leading cause of disability worldwide set the stage for the creation of WSC. The results from the BJD Neck Pain Task Force strengthened the case for the urgent need to address spine pain, particularly in underserved communities. The momentum generated from this work enabled the strengthening of global musculoskeletal networks of like-minded individuals who were committed to making a change. Support from many national and international agencies provided the initial momentum to further engagement of government and individuals to conceive of and implement the Botswana pilot project.

Early engagement of local consultants to facilitate communication between the government and WSC was an essential element toward success and resulted in local champions who advocated for the program with government and within their communities.

Implementation methodology

Once the WSC organization was structured and incorporated and the intention to start a pilot project in Botswana was articulated, the following implementation methodology was used:

- A visit to Botswana to confirm the need and the possibility of program development which involved meeting the local community members, health professionals, leaders and the public to learn of their health priorities.
- Formal discussions with government, health facilities and local health providers to develop a Memorandum of Understanding between WSC and the Botswana government
- Identification of team members to oversee the development of the program, delivery of care and evaluation (see www.worldspinecare.org)
- Active seeking of funding (grant applications, foundations, professional organizations and societies, governments, individuals)
- Local community development and capacity building
- Development of clinical model of care, documentation processes, data bases, data collection processes, clinical outcome measures
- Qualitative research to understand the unique cultural environment of the community
- Delivery of clinical care, community education and exercise programs, public health programs (scoliosis screening, Straighten-up and Move)
- Broad dissemination about WSC (presentations, meetings, publications, electronic messaging, public broadcasting)
- Engagement of researchers to evaluate program outcomes and the impact of the program on the local burden of spine disorders
- Education of local health workers (capacity building), professional development of providers (volunteers) and staff, scholarship opportunities all support program sustainability

Moving forward

Current priorities are to ensure sustainable funding to support longevity of the Botswana clinics and to enable quality data collection so that WSC may better understand the impact of its efforts in the engaged Botswana communities. The Botswana government has recently requested the development of a third site in Gaborone and has indicated that they will provide full support for this clinical site. Creation of an electronic health record and data base to facilitate collection of data across sites is in development to assist in improving WSC infrastructure. The Botswana pilot

program has now been scaled up to the Dominican Republic and Ghana, with a program expected to open in India in 2016.

Takeaway messages and recommendations

- Active engagement of local community members (leaders, health providers, families,) is essential for success. Broad community consultation through meetings with government, policy makers, local health providers, community leaders, families and people living in the local community (Shoshong and Moca) was undertaken to ensure that service delivery is relevant to and appropriate for those receiving it. Assessment and treatment protocols must be adapted to local customs and traditions if they are to be accepted and outcomes assessed from the interventions instituted in poor underserved communities.
- Inter-professional collaboration and the presence of a primary spine care clinician (this position requires a minimum of a 1 year commitment) at each site is the key to continued success of spine care delivery in developing countries.
- Partnerships with government and local health systems as well as local capacity building (training of local health workers, clinical administrative support workers and future health professionals) help to facilitate sustainability and the long term success and longevity of the spine care clinics.
- Continued research, review and implementation of best practices for the application and measurement of interventions for the management of spinal disorders. Critical to the success of a global, sustainable World Spine Care program is the ongoing collection of data from clinical programs.
- The realization of a multipronged and longitudinal education program that will train health care professionals in full service primary care for people who are suffering from spinal disorders will help to facilitate sustainability and transferability of the Botswana clinics eventually to the local community.

It is clear that no single organization, no matter its resources, has the ability to impact the estimated 1 billion people who suffer from spinal pain. The number of people who do not have access to care is simply too large for any one charitable organization to have a major impact globally. Hopefully, however, WSC can create a sustainable model of care that can be replicated by others, and like-minded organizations can provide the leadership, research and a model of care that can be considered by any community that would like to provide care for people with spinal disorders. If these aims are achieved, it is conceivable that we can impact the leading cause of disability in the world.

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ANNEX 1. FOUR CATEGORIES of practices

EMERGING PRACTICES – PROMISING PRACTICES – LEADING PRACTICES and BRILLIANT FAILURES



Evaluation criteria	Key statements	Rating	Score
Impact	<p>A) There are theoretical and empirical foundations that conceptually support the practices that it can have a positive impact on user experience, service delivery processes, outputs and outcomes and clinical and population health outcomes.</p> <p>B) There are preliminary results of the practice that show a positive impact on user experience, service delivery processes, outputs and outcomes and clinical and population health outcomes.</p> <p>C) Results of the practice consistently demonstrate a positive impact on user experience, service delivery processes, outputs and outcomes and clinical and population health outcomes.</p>	<p>Based on the evidence, what is the most accurate statement to describe the practice? Based on your choice, give the practice a score:</p> <p>A) counts for 1 point</p> <p>B) counts for 2 points</p> <p>C) counts for 3 points</p> <p>0 if it does not meet the bar for any criteria</p>	B = 2 points
Quality of methodology	<p>D) There is evidence from expert opinion, informal evaluations, personal accounts, informal observations, case studies.</p> <p>E) There is evidence from external evaluation reports, formal publications, health impact assessments and/or intervention research.</p> <p>F) There is evidence from randomised control trials/studies.</p>	<p>Based on the evidence, what is the most accurate statement to describe the practice? Based on your choice, give the practice a score:</p> <p>D) counts for 1 point</p> <p>E) counts for 2 points</p>	D - 1 points

		<p>F) counts for 3 points</p> <p>0 if it does not meet the bar for any criteria</p>	
Sustainability	<p>G) The practice is relatively new and future funding and/or technical support have not yet been confirmed.</p> <p>H) The practice has been implemented for a considerable amount of time, is currently funded and has a good probability of securing future funding and support.</p> <p>I) The practice has been maintained over time with guaranteed long-term funding and technical support.</p>	<p>Based on the evidence, what is the most accurate statement to describe the practice? Based on your choice, give the practice a score:</p> <p>G) counts for 1 point</p> <p>H) counts for 2 points</p> <p>I) counts for 3 points</p> <p>0 if it does not meet the bar for any criteria</p>	H = 2 points
Transferability	<p>J) The practice has only been implemented in one setting but can be theoretically scaled up to other settings and contexts in the same context/health system.</p> <p>K) The practice has been replicated and/or adapted to a different setting in the same context/ health system.</p> <p>L) The practice has been replicated and/or adapted to different settings / contexts and health systems.</p>	<p>Based on the evidence, what is the most accurate statement to describe the practice? Based on your choice, give the practice a score:</p> <p>J) counts for 1 point</p> <p>K) counts for 2 points</p> <p>L) counts for 3 points</p> <p>0 if it does not meet the</p>	L = 3 points

		bar for any criteria	
<p>Add together the scores of the four evaluation criteria to determine the overall rating.</p> <p>Overall rating:</p> <p>Rating between 9 and 12 is a leading practice.</p> <p>Rating between 5 and 8 is a promising practice.</p> <p>Rating between 0 and 4 is an emerging practice.</p>		<p>Overall Rating:</p> <p><i>8 points - Promising practice</i></p>	<p>Category of Practice:</p> <p><i>Promising</i></p>